CLAIMS

1. Method for separation of isotopes, where a specific isotope of a isotope composition is purified by exploiting the difference in the isotope's mass diffusivity by making the natural isotope composition, in one cycle, travel in a mass stream through a media by diffusion and optionally also convection, and thus obtain a fractioning of the isotopes such that the wanted isotope is enriched in one fraction of the mass stream, collecting this enriched fraction of the mass stream and send it through another cycle to obtain a fraction with higher content of the wanted isotope, and repeat these cycles until the wanted isotope has become sufficiently enriched,
characterised in that the hydrogen is used as ligand on the element that is to be separated, and that the hydrogen and the element that is to be separated is employed in the form of a chemical compound that is in a gaseous state at the actual pressure and temperatures.

2. Method according to claim 1,
characterised in that, in the case of isotopically separating ^{28}Si from ^{29}Si and ^{30}Si, that the gaseous hydrogen compound is silane, SiH_4.

3. Method according to claim 1,
characterised in that the gaseous hydrogen compound is one of B_2H_6, NH_3, CH_4, H_2O, H_2S, HCl, Ga_2H_6, Ge_2H_6, H_2Se, HBr, H_2Sb, and H_2Te for obtaining an isotopically pure fraction of B, C, O, S, Cl, Ga, Ge, Se, Br, Sb, and Te, respectively.

4. Method according to any of claim 1-3,
characterised in that the gaseous hydrides are separated through mass diffusion through a membrane.

5. Method according to any of claim 1-3,
characterised in that the gaseous hydrides are separated through ultra-centrifuging in a gas cyclone.

6. Method according to any of claim 1-3,
characterised in that the gaseous hydrides are separated through mass diffusion through a chromatographic column.

7. Method according to claim 6,
characterised in that the chromatographic column are packed with monodisperse polystyrene particles.

8. Method according to claim 7,
characterised in that the monodisperse polystyrene particles are made of a mixture comprising divinylbenzene and polyacrylate.

9. Method according to claim 8,
characterised in that the monodisperse polystyrene particles have a particle size of 20 μm, porosity of 70 %, and surface area of 148 m^2/g.

10. Method according to any of claim 7-9,
characterised in that the carrier gas is argon.

11. Method according to claim 10,
characterised in that the argon gas has a pressure of 0.5 bar in the chromatographic column and that the temperature is 50°C.